

# Executive Summary

## Introduction

This is the formal submission of the funding request for delivering the outputs of the Snowdonia Visual Impact Provision (VIP) project. This submission is made in accordance with Special Condition 6G of the National Grid Electricity Transmission (NGET) licence.

## Background

Ofgem has established a £500m provision across Great Britain to reduce the impact of existing electricity transmission lines in Areas of Outstanding Natural Beauty (AONBs) and National Parks. In 2014, we created a policy document which set out the guiding principles for selecting the VIP projects. Following stakeholder consultation by Ofgem, the Authority confirmed their support for the implementation of the Policy. The principles of this were as follows:

- result in greatest landscape enhancement benefits
- result in greatest opportunities to conserve and enhance natural beauty, wildlife and cultural heritage whilst avoiding unacceptable environmental impacts
- result in greatest opportunities to encourage public understanding and enjoyment of the protected landscapes, including positive socio-economic impacts
- are technically feasible in context of the wider transmission system
- are economical and efficient.

The Snowdonia project was proposed for development in September 2015 by the Stakeholder Advisory Group (SAG). This group consists of independent stakeholder organisations working together to advise us in identifying the areas that could benefit most from VIP funding. The selection process involved a landscape and visual assessment of all 571km of transmission lines in National Parks and AONBs in England and Wales; this was carried out by two firms of landscape consultants. As a result, the SAG shortlisted 12 sections of line, which they ranked based on their high impacts on the landscape. Snowdonia was found to have one of the highest landscape and visual assessment scores, which led to the SAG prioritising this project, along with three others.

As Snowdonia meets the principles of our VIP Policy, we accepted the SAG's proposal and agreed to carry out more detailed development to determine the feasibility of the project.

## Proposal

The project will replace a 3.3km section of existing overhead line (OHL) with an underground cable in a tunnel. This will result in the net removal of 10 pylons. One new tower will be installed to connect the existing OHL into the underground cable. Two vertical shafts are required to connect each end of the tunnel. These will have two headhouses over the shafts. Due to the nature of the site, there are several engineering difficulties on this project. This includes tunnelling through mixed geology, which can be challenging for the boring machine, noise constraints, delivering power to site and removal of the OHL (two pylons and an extra set of foundations are in an environmentally designated area).

## **Development of solution**

Several undergrounding solutions were considered during the development of the Snowdonia project. The main challenge was crossing the estuary, which the OHL spans. Options considered included routing the cables over an existing bridge (insufficient space) or diverting along a highway, which would cause major disruption to traffic and was not technically feasible due to the lack of space. The only feasible option was to cross the estuary via tunnelling methods. Although a trenchless drilling technique was an option, it was rejected by the Stakeholder Advisory Group as it would only remove six pylons and have an adverse environmental impact on the estuary. In comparison, a tunnel allowed the removal of 11 pylons, which would achieve the maximum benefits from the funding.

## **Benefits**

The Snowdonia project will result in a significant landscape and visual benefit to this area in Snowdonia. Although a portion of the line sits outside of the National Park, it has a large impact on its landscape. For example, Porthmadog is not within Snowdonia but is considered to be an important gateway into the National Park. The removal of the pylons will improve the tranquil nature of the coastal landscape and positively impact the setting of Snowdonia. It will also improve the panoramic views of the wide sand banks and contrasting mountain backdrop, from the Dwyryd Estuary.

Within the National Park, the removal of the pylons will greatly benefit the Ardudwy Coastal Hinterland landscape. This contains a complex and dramatic landscape which combines the contrast between the tourist coastline of the National Park and the adjacent upland areas. A relatively large proportion of the community of Penrhyndeudraeth would also benefit from the removal of the pylons.

Users of the Wales Coast Path, which runs around the south east of the Dwyryd Estuary would experience major benefits from this project. Walkers generally experience very close up views of the OHL and cyclists are also affected. The removal of the infrastructure would provide a more tranquil experience for all those who use these popular routes.

To illustrate the impact of removing these pylons, an artist's impression of a section on the Snowdonia project can be found below.



Although there are likely to be effects on some statutory sites and wildlife, these will be offset by proposed mitigation and enhancement measures, such as habitat reinstatement after construction.

To further quantify the benefits of the scheme, we commissioned the services of Professor Carys Swanick; a recognised expert in the field of landscape assessment. A visual assessment score was determined based on the impact of the overhead line and its removal. A score of greater than 25 indicated an impact of 'very high importance' while a score from 0 to 9 indicated an impact of 'lower importance'. The pre overhead line removal

score for Snowdonia was 29 (indicating a very high importance). The score after the overhead line removal was 6. This indicated a significant landscape benefit from the implementation of the project.

### **Stakeholder engagement**

We have consulted widely with stakeholders throughout the development of the Snowdonia project and have carried out extensive engagement at a local level. One key group has been the Stakeholder Reference Group (SRG). This is made up of local organisations and the council to advise on issues. The SRG has been essential in shaping the decisions on the project that determine the underground route. For example, we altered the design of the tunnel head houses and clarified areas of concern such as road closures and habitat impacts.

We held several public drop-in events between 2015 – 2019, which had an overwhelmingly positive response. In addition to these events, we received expressions of support from several conservation groups (Wildlife Trust and Snowdonia Society amongst others) during the project's development and through the pre planning application consultation.

At a 2018 exhibition, a total of 35 out of 36 respondents filled in feedback forms to show strong support for the project. Examples of comments included:

*“It will be a great improvement to the visual amenity of the Dwyryd estuary. Very much in favour.”*

*“First class proposal. It will greatly enhance the quality of the area. It will, I hope, help the economy by improving the outlook for visitors.”*

The final round of consultation was carried out at the end of 2019, attracting 41 visitors ranging from landowners to the Town Council. The majority of the feedback was supportive, with stakeholders being pleased that we had listened to their concerns and changed our project plans to accommodate them, where possible.

Throughout the development of the Snowdonia project, there has been regular dialogue with Ofgem, who are also a member of the SAG. This has been beneficial during the development of VIP and the Snowdonia project. Additionally, we have liaised closely with the two companies that own the Scottish transmission networks who are developing their own visual mitigation projects. This maximises the benefits of the allowance across England, Scotland and Wales.

### **Willingness to pay and acceptability testing**

In 2012, we commissioned a study to assess how much domestic consumers were willing to pay to underground overhead lines in National Parks and AONBs. The research concluded, on average, consumers were willing to pay £11 per year (2016/17 price) for 8 years for up to 16km of existing overhead lines in National Parks and AONBs to be buried underground. To test that these 'willingness to pay' figures remain valid, we commissioned further independent acceptability testing with consumers in 2018. This asked representative groups of bill-payers whether electricity bill increases relating to the four lead VIP projects would be acceptable.

The research comprised of ten discussion groups, nine in depth interviews with vulnerable bill-payers and a quantitative survey of 2,002 bill payers aged 16 and over. In comparison to the willingness to pay figure, the estimated cost provided was more reflective. This was set

at a cost of £0.60 per year for 25 years, or if comparing across 8 years, it equates to £1.87 per year. When presented with the details of the Snowdonia project, 65 per cent found it acceptable for these costs to be passed onto consumers. Only 14 per cent of the research group found it unacceptable. Finally, 17 per cent did not provide a view either way, while the remaining 4 per cent didn't know or could not say. For the minority that opposed, their main reason was the rejection of the basic idea that consumers should foot the bill. The results also suggested that it was not a question of affordability, as the majority believed that the cost per household was easily affordable.

The perceived acceptability of the VIP projects is higher among rural bill payers and those living close to an AONB or National Park. Other than those in the lowest income bracket, the majority of people in other income levels found the projects acceptable.

As part of the RIIO-T2 business plan, in 2019 we carried out a joint willingness to pay study with SP Transmission and SSE Transmission. This covered a sample of 1,000 consumers plus 600 business customers. Respondents were asked to think about enduring bill impacts compared to the 2012 study, which only focused on the eight years of the RIIO-T1 price control.

Results showed a GB wide willingness to pay an enduring value of £6.87 per household per year (2019/20 prices) to underground an additional 20 miles (32km) of existing lines in designated areas (AONBs, National Parks and National Scenic Areas in Scotland).

This research demonstrates that the majority of end consumers continue to support the removal of overhead lines from within National Parks and AONBs.

### **Further project development**

Following a period of project development, and alongside ongoing stakeholder engagement and consenting activities, a competitive tender event was carried out to invite bids from contractors to provide a tunnel, HV system and associated works.

During the tender event period, we noticed a significant increase in the number of generation applications for offshore windfarms which would connect into the North Wales region. This has partly been driven by the government's drive towards net zero. In October 2020, the Prime Minister announced new plans to "build back greener" by setting new offshore wind targets from 30GW to 40GW by 2030 and aimed to make the UK a world leader in wind energy. This led us to carrying out further system studies to assess whether the cable ratings for the Snowdonia project would cater for the increased forecasted generation. The result of the studies showed that the planned cable rating, which was lower than the existing OHL, could be exceeded within 10 years. This required us to increase the original tunnel size and install higher rated cables.

To prevent us from installing an inefficient solution, we agreed with Ofgem to run another tender event with the change in technical scope.

## Risks

The top five project risks are below:

Risk	Mitigation
1. Geological ground conditions differ from ground investigations, causing delays.	Analyse excavated materials during works to determine ground make up.
2. The Tunnel Boring Machine (TBM), may break out of the rock during tunnelling, which reduces progress.	Investigate ahead of the TBM during works to ensure changes are known.
3. There may be a failure of the TBM, with total loss of the tunnel	Ensure contractor's maintenance schedule of the TBM is robust
4. Change in law including impacts of Brexit but excluding covid-19	Monitor Welsh assembly legislative announcements
5. Delays to third party approval of designs	Early engagement with all parties and coordinate requirements where possible

Due to the unpredictable risk of ground conditions for tunnelling, which would have led to a considerably large risk allowance, we agreed with Ofgem, a cost and output adjusting event for certain ground risks. This allows us to request a smaller risk value to be included as part of the project contingency.

## Proposed outputs and efficient costs

The outputs are shown in Table 1. This is also referred to as the Enhancing Pre-existing Infrastructure (EPI) output:

Table 1 EPI output

Cost element	Delivery Year	Outputs	Cost (19/20 price)
Snowdonia project	2030	<ul style="list-style-type: none"> <li>• Installation of 3.4km of underground cable</li> <li>• Removal of existing overhead line and 11 pylons</li> <li>• Installation of 1 shunt reactor</li> <li>• Installation of 1 new pylon</li> <li>• Installation of two tunnel headhouses</li> <li>• Installation of a new cable sealing end compound</li> <li>• Reconfiguration and extension of existing sealing end compound</li> </ul>	£300m

## Funding request

We are putting forward this project for funding assessment. As stated under special

condition 6G of the electricity transmission licence, it is requested that Ofgem determines a) whether the Snowdonia project is compliant with the VIP Policy and b) whether the proposed costs are economical and efficient. We will update the funding amount after the tender event has concluded for the new technical scope. We anticipate this to be ready in November 2021.

It is our understanding that an approval for this project would take place outside of the current T1 regulatory period but will still be part of the original T1 VIP provision.